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ADJUSTABLE-STOP HINGE

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FIG. 1

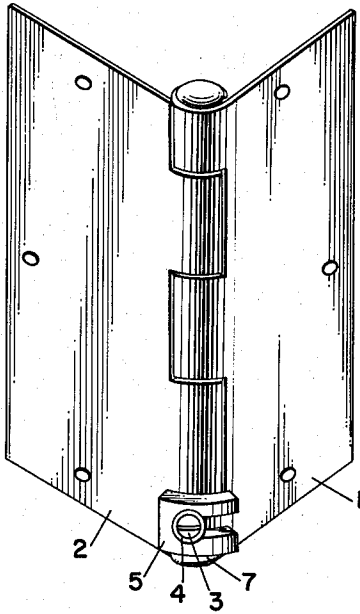


FIG. 2

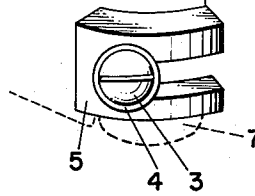


FIG. 3

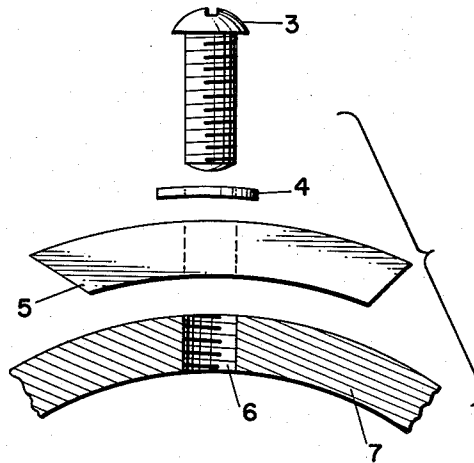


FIG. 4

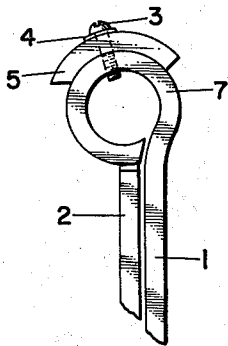
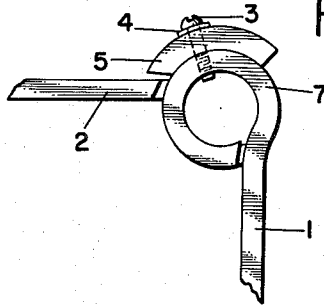


FIG. 5



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The present invention relates generally to improvements in hinges and it relates more particularly to an improved hinge structure provided with a stop member limiting the angle of opening of the hinge.

The conventional hinge is usually constructed so as to permit the relative rotation of the hinge section or leaves an angle of at least 180° and frequently almost 360°. While under many conditions it is desirable that the hinge have a wide opening angle it is frequently necessary to provide a stop device to limit the angular movement of the swingable member. Thus, in the case of doors or the like, in order to prevent the opening door or parts thereof such as the door knob, from striking adjacent walls or other fixtures a stopping device is employed. This may take many forms, such as the conventional door stop which is mounted on the door or on the floor in the path of the door or a door supported check or the like. While these devices serve their purpose they possess many disadvantages and drawbacks. They are usually bulky, unsightly and awkward devices often malfunctioning and becoming loose and frequently marking the wall, door or floor with which they are associated and otherwise leave much to be desired.

It is therefore a principal object of the present invention to provide an improved hinge structure.

Another object of the present invention is to provide an improved hinge structure provided with means limiting the angular opening thereof.

Still another object of the present invention is to provide an improved hinge structure provided with means limiting the opening thereof to an adjustable angle.

A further object of the present invention is to provide an improved hinge of the above nature characterized by its simplicity, ruggedness, low cost and ease of adjustment.

The above and other objects of the present invention will become apparent from a reading of the following description taken in conjunction with the accompanying drawing wherein:

FIGURE 1 is a front perspective view of an improved hinge embodying the present invention and illustrated in an open position.

FIGURE 2 is an enlarged fragmentary detailed perspective view of the stop element carry section of the hinge;

FIGURE 3 is an enlarged exploded plan view of the stop element, hinge knuckle and connecting means;

FIGURE 4 is a top plan view, partially broken away of the hinge in fully closed position; and

FIGURE 5 is a view similar to FIGURE 4 with the hinge in its fully open position as limited by the stop element.

In a sense the present invention contemplates the provision of an improved hinge of the character described comprising a pair of hinge plates having interdigitating axially aligned substantially cylindrical knuckles along the adjacent edges thereof, a hinge pin registering with said knuckles and a stop element mounted on the outer face of one of said knuckles. Said stop element may be circumferentially adjustable with respect to said knuckle. Said element lies in the path of movement of the opposite hinge plate.

According to a preferred form of the present invention the stop member is in the form of an arcuate strip which is coaxial with and slidably engages one of the knuckles. It may be welded or otherwise affixed thereto. In an

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other form it has a circumferential slot formed therein which registers with a screw which in turn engages a radially extending tapped bore formed in the knuckle. Thus in this form the stop element is readily circumferentially adjustable by loosening the screw, sliding the element and tightening the screw thereby adjusting the opening angle of the hinge.

Referring now to the drawings which illustrate a preferred embodiment of the present invention, the reference numerals 1 and 2 generally designate a pair of complementary rectangular hinge plates or leaves having formed along their adjacent vertical edges in the usual manner, interdigitating substantially tubular cylindrical knuckles 7 which are axially aligned and engaged by a registering headed hinge pin. As is conventional, the hinge plates are provided with spaced apertures which facilitates their securement to a door and door frame.

The adjustable stop element is defined by an arcuate bar or strip 5 of relatively small angular extent having an inner cylindrical surface which slidably embraces the outer face of the lowermost knuckle 7 and an outer cylindrical surface, said surfaces being substantially coaxial. Thus, the strip 5 is circumferentially movable along the knuckle 7. Formed in the arcuate strip 5 is a circumferentially extending slot which reaches a trailing end of the strip 5.

In order to lock the stop element 5 in any desired adjusted position there is formed in the lowermost knuckle 7 a tapped radial bore 6 which registers with the stop strip slot. A headed screw 3 carries a curved washer 4 conforming in shape to the outer face of the strip 5 and passes through the strip slot and engages the tapped bore 6.

In employing the improved hinge described above it is fastened to the door and support frame in the usual manner either half mortised, full mortised, half surfaced or full surfaced and may be in the form of a left handed or right handed hinge as desired. The screw 3 is loosened and the stop member 5 retracted to its open most position, that is fully to the right as illustrated in FIGURES 1 and 2 of the drawing. The door is then swung to its desired limited open position, the stop member advanced into contact with the hinge plate 2 and the screw 3 tightened. The stop limiting position may be adjusted by merely loosening the screw 3 and repeating the above procedure. Furthermore, by removing the screw 3 and stop member 5 the hinge reverts to the conventional form. It should be noted that the leading edge of the strip 5 is planar and abuts and is parallel to the hinge plate 2 when the latter is in its stop limited open position.

While there has been described and illustrated a preferred embodiment of the present invention it is apparent that numerous alterations, omissions and additions may be made without departing from the spirit thereof. For example, the hinge leaves may assume any desired shape and may be varied in size. Moreover, while the stop member 5 has been illustrated as mounted on the lowermost knuckle it may be mounted on any of the knuckles.

What is claimed is:

1. An improved hinge of the character described comprising a pair of hinge plates having interdigitating axially aligned substantially cylindrical knuckles along the adjacent edges thereof, a hinge pin registering with said knuckles, a stop element mounted on one of said knuckles and having an inner cylindrical surface complementing and circumferentially slidably engaging the outer surface of said knuckle, and means adjustably locking said stop element in a predetermined position on said knuckle.

2. An improved hinge of the character described comprising a pair of hinge plates having interdigitating axially aligned substantially cylindrical knuckles along the adjacent edges thereof, one of said knuckles having a radi-

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ally extending tapped bore formed therein, an arcuately shaped stop member slidably engaging and coaxial with said knuckle, said stop member having a circumferentially extending slot formed therein, and a screw registering with said slot and engaging said tapped bore.

3. An improved hinge of the character described comprising a pair of opposite hinge plates having interdigitating axially aligned substantially cylindrical knuckles along the adjacent edges thereof, a hinge pin registering with said knuckles and a stop element mounted on the outer face of one of said knuckles said stop element lying in the path of movement of the opposite hinge plate and being circumferentially adjustable on said knuckle to which it is mounted, and being provided with a substantially planar end face adapted to abut the opposite hinge

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plate when in fully open position, said stop element having a circumferentially extending slot formed therein, said slot extending to a trailing edge of said stop element.

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